

Solar grid system in ghana

Utilising small-wind, solar and energy storage to create bespoke renewable solutions, Ryse Energy a global leader in decentralised renewable energy generation, providing renewable energy to some of the most challenging urban and rural environments.

We design and manufacture small wind turbines and hybridised off-grid solutions, and with more than 4,000 projects to date, decades of experience, and installations across all seven continents, Ryse Energy brings together the best knowledge, talent and technology available in the market today to drive innovative and practical solutions.

Whilst Ghana has one of the highest en-ergy access rates in Sub-Saharan Africa,²⁹ access to energy in the remote agricultural and rural areas of the country is extremely challenging. High diesel costs and lack of infrastructure to reach last-mile communi-ties was the primary reason for the project.

A hybrid wind-solar mini-grid system was selected as the optimum solution. A farm was selected as the project site for the installation of the system based on the availability of a large open area as well as access to unobstructed wind. The system incorporates the following components:

The DRE system is used as the area's pri-mary energy source, providing over 316 kWh/day to the community and peak power of ~ 50 W. The different energy technologies complement one another to keep the generation flow constant day and night. Community training regarding op-eration and maintenance was undertaken to ensure the reliability and resilience of the system.

The total project cost was approximate-ly EUR 180,000 which was funded with a grant from the United Nations. Trama TechnoAmbiental owns the DRE system. In terms of ongoing operation and main-tenance, training was conducted by Ryse Energy's team to the local communities to ensure resilience and reliability of the system. Operational costs are very low with the local community maintaining the system.

The DRE system enabled agriculture to blossom as water pumping and irrigation systems can now be operated. In addition to that, the local community of around 500 people gained access to electricity for basic needs, such as lighting and heating. The resulting energy access would've re-sulted in a reduction of 85 metric tonnes of CO₂ per year if fossil fuels were utilised which is the amount of emissions avoided. An estimated 200 lives were positively im-pacted by the installation, creating over 20 jobs within the community.

The potential for replication and scale-up of this system is extremely high, the com-bination of wind, solar and energy stor-age creates a resilient and reliable system which generates consistent renewable energy for agricultural needs and wider community services. Ryse Energy believes the collaboration with the local community, system design, energy output was a great success. The highlight is the change of the project



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design from a purely agricultural installation to a village mini-grid.

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